

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

DUAL CHAMBER DISPENSER WITH DUAL POSITION DISPENSING CAP

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DUAL CHAMBER DISPENSER WITH DUAL POSITION  
DISPENSING CAP

(Attorney Docket No. SWD-130A)

BACKGROUND OF THE INVENTION

1. Field of the Invention

The present invention relates to dispensing, and, more particularly, to devices for simultaneous dispensing of plural, diverse flowable materials from separate chambers. The present invention is a dispenser container with plural chambers that are separated, and a unique cap that, when closed, seals the separate chambers from one another, and seals a dispensing orifice that is located on the cap. These devices may have two or more than two chambers, and have diverse uses, including, among others, for pharmaceutical products, cosmetic and beauty aides, hair dyes, colorants and paints, teeth whiteners, etc.

2. Information Disclosure Statement

The following patents represent the state of the art relating to dual dispensing containers and caps:

United States Patent No. 6,550,647 describes a multi-chamber bottle that can be made by a blowing process for separately holding different products, requiring only a single closure. The bottle may, for example, have two chambers with openings which are disposed inside

the neck of the bottle. One of the openings is disposed coaxially with the neck. This allows a closure to be screwed or snapped onto the neck that is provided with a thread or a snap bead. In the process, the attachment penetrates the opening in a sealing manner. This creates two channels, which lead from the chambers to the outlet openings. The outlet openings can be closed with a cap.

United States Patent No. 6,544,213 B1 describes a present invention that is directed to a dual compartment, mixing and dispensing device suitable for the containment of two separate pharmaceutical components that mixable, upon breaking of a seal that separates the components, to provide an instantly mixed dose of medication. The medication can be administered to a patient through an aperture located at one end of the device. The device is characterized as two chambers connected by a flexible, sealed orifice, wherein the two components are separated. Flexing of the device at the orifice breaks the seal and allows mixing of the components to prepare the dose. Thereafter, an end-portion of the device can be opened for oral administration of the dose.

United States Patent No. 6,481,571 B1 describes dual component container systems that are provided for separately storing at least two liquids, which are intermixed within the system prior to dispensing. Two or more containers having mixing openings are provided wherein the mixing openings are sealed by sealing members. The sealed openings of the containers are interconnected by one or more connecting elements,

thereby forming a sealed conduit interposed between containers and wherein at least one of the sealing members is connected to the connecting element by a releasable clamping joint. Systems of the present invention are designed such that relative movement of the two containers causes the sealing members to open or be removed, whereby fluids from the two or more containers may intermix via the open conduit formed by the connecting element.

United States Patent No. 6,283,316 describes a present invention that is an orifice reducer for a two or more compartment container having a single neck finish. The reducer comprises a plate having two or more apertures, an upper surface, a lower surface, and an outer edge. The two or more apertures are positioned to align with the two or more chambers of the container. The apertures may be of different sizes to allow for the proper dispensing of the different phases of product contained within each compartment of the container.

United States Patent No. 5,873,494 describes a dispensing structure that is provided for a container which has first and second storage chambers and first and second discharge openings each separately communicating with one of the first and second storage compartments, respectively. The dispensing structure includes a body for extending from the container. The body has a peripheral wall that defines first and second discharge conduits for communicating with the first and second discharge openings, respectively. The dispensing

structure also includes a first and second dispensing conduits mounted in the body peripheral wall for tilting movement between (1) a dispensing position in which the first and second dispensing conduits are in fluid communication with the first and second discharge conduits, respectively, and (2) a non-dispensing position. The first and second conduits include, respectively, first and second sealing plugs therein for occluding flow from the first and second discharge conduits, respectively, when the first and second dispensing conduits are in the closed position and for permitting flow from the first and second discharge conduits when the first and second dispensing conduits are in the open position.

United States Patent No. 5,811,060 describes a new flask for two products, that includes a general flask body having a neck; a vessel housed inside the neck of the general flask body and having a weakened part; the neck of the flask body including a thread, and a flange at an upper part of the neck; a cap which screws onto an outside of the neck, the cap including a thread which is complementary to the thread on the neck, a flange which is complementary to the flange on the neck, a wall defining a hole, and a vertical projection which emerges from an inside of the cap, in the form of a short cylinder with extremely short edges, the length of the cylindrical vertical projection facilitates cutting of the weakened part of the vessel, when the cap is screwed down; and a cover hinged to the cap and made from the same material as the cap, for fully

sealing a top of the cap by pressure, the hinged cover of the cap having a central projection at the lower part thereof corresponding to the hole and of similar dimensions as the hole in the cap, such that the hinged cover forms an airtight seal with the hole.

5 United States Patent No. 5,765,725 describes a dual compartment squeezable dispensing container that alternatively selectively dispenses independently two separate fluid components at a selected speed and in a selected direction that includes a container portion, a cap portion, and selection apparatus. The container portion has two separate  
10 compartments and contains the two separate fluid components. The cap portion is replaceably and securingly attached to the hollow container. And, the selection apparatus is associated with the cap portion and alternatively selectively dispenses independently the two separate fluid components at the selected speed and in the selected direction.

15 United States Patent No. 5,758,786 describes a container that is divided into multiple compartments by a series of vertically extending partitions radiating from the central axis of the container. A nipple is attached to a collar which in turn, is attachable to the mouth of the container. The nipple includes a base portion having an aperture radially  
20 offset from the central axis of the nipple and which is adapted to register with only one of the compartments depending upon the relative angular orientation of the nipple and the collar. a series of L-shaped slots is provided on the collar with the slots being evenly spaced about the

periphery of the collar and with the number thereof corresponding to the number of internal compartments in the container. The inside surface of the nipple sidewall carries a like number of projections evenly spaced about the inside periphery thereof and adapted to engage corresponding L-shaped slots on the collar. To change the angular orientation of the nipple and collar, the nipple is counter-rotated to unlock and disengage the projections from the slots. The nipple may then be rotated to a new relative angular position relative to the collar, and locked relative to the collar by causing the projections to engage the slots in the new orientation. Each time the relative angular orientation of the nipple is changed relative to the collar, the aperture in the base portion registers with a different vertical compartment, thereby allowing the fluid only in that compartment to be discharged through the nipple.

United States Patent No. 5,573,143 describes multi-chamber containers with a dispenser/doser portion that are blow molded as a single integral piece. Each chamber can then be fitted with dip tubes with a dip tube fitment forming a seal in the transition of the container body to the dispenser/doser portion. The dividing webs in the container which form the container into multiple chambers are continued up into and through the dispenser/doser portion. The webs of the container body are of a thickness so that they flex upon a compression force being applied to the container walls. This compression force flows liquid in

each chamber of the container body up through the dip tubes and into the dispenser/doser portion.

United States Patent No. 5,154,917 describes a mouthrinse product that comprises a multi-compartment bottle with liquids of different colors stored in the compartments, the combined stream of the liquids dispensed from the bottle combining to form a liquid admixture of yet another color.

United States Patent No. 4,903,828 describes a bottle closure cap for two-component packages that is formed with a collar extending from the bottom of a cup-shaped cap which has a bottle screw-on thread on the inner wall of the cup. The collar connects via a thread which is directed opposite the bottle-screw-on-thread, to a beaker which can be brought over projections seated on an outer side of its beaker cylindrical wall into a non-rotatable but axially displaceable coupling engagement with the inner wall of the bottle neck. A front end of the collar comes into form-locked engagement by an annular groove on the bottom of the beaker.

United States Patent No. 4,875,577 describes a multichamber container with no compressed gas therein comprises an outer container and an inner container for pourable substances which are to be kept separate. The substances may be combined inside the container for the purpose of extracting a mixture of substances. The inner container has an open end which is connected to an inner side of a cap with positive



locking, in a non-rotatable and axially detachable manner, and has at least one projection on the outside wall. The outer container is connected to the rotatable cap by means of a snap connection and has at least one projection on the inside wall. The projections of both containers are formed in such a manner that they intercommunicate for combining the substances by rotation of the cap. The inner container is axially detachable from the cap.

United States Patent No. 4,793,475 describes closure caps for binary packaging systems comprising an active ingredient concentrate component and a diluent component, which allow the user to admix the two components without coming in contact with either of them or with the resulting mixture.

United States Patent No. 3,729,553 describes a packaged effervescent composition comprising a package having two compartments for storage of ingredients of said effervescent composition from which the ingredients are adapted to be dispensed simultaneously and proportionately for reaction with each other, the first compartment containing a solution of an effervescing producing reactant and the second compartment containing a complementary solution of an effervescing releasing reactant suitable for releasing the effervescence of the first compartment upon reaction with the effervescing producing reactant.

Notwithstanding the prior art, the present invention is neither taught nor rendered obvious thereby.

#### SUMMARY OF THE INVENTION

5           The present invention is directed to a multiple chamber dispenser with a dual position dispensing cap. The invention includes a dispenser container that may have any a shape and be made of any functional material, and has a corresponding cap.

10           The dispenser container has a circular top, a bottom, an outer wall structure and a plurality of chambers within the outer wall structure. In one preferred embodiment, there are two separate chambers, and the device is used for two distinct flowable materials.

15           The dispenser container circular top has threading and has an upper stop and a lower stop located on an outside surface of the circular top. The plurality of chambers are side-by-side. By this is meant that they are adjacent in a vertical plane, or are at least arranged so that they have tops or effluent ports that are side-by-side. These chambers are separated by at least one divider wall that extents to the circular top of the dispense container.

20           A cap is connected to the dispensing container and has at least one dispensing orifice, centrally located in preferred embodiments. The cap has a side wall structure with threading on its inside that corresponds to the circular top threading, and the cap is capable of screwing onto the

circular top past the upper stop so as to be non-removable from the dispensing container. The cap has a first position, being a lower position on the dispenser container, and also being a closed position, and has a second position, being a higher position on the dispenser container, and also being an open position for dispensing. The cap and dispenser container are cooperative, wherein when the cap is in the first position, the at least one dispensing orifice is closed so as to prevent content flow therethrough, and the plurality of chambers are isolated and sealed from one another and sealed from dispensing; and, wherein when the cap is in the second position, at least one dispensing orifice is open so as to permit content flow therethrough, and the plurality of chambers are not sealed from one another and are not sealed from dispensing. Thus, when the cap is rotated from the first position to the second position, and the dispenser container is inverted, content from each of the plurality of chambers may simultaneously be dispensed therefrom and through the dispensing orifice(s).

In other embodiments, when the cap is in the second position, a top cap would prevent content flow through orifice. This would enable a user to move the cap to its second position, shake the container for mixing the contents of the chamber with one another, and then remove the top cap for dispensing.

In some embodiments, the present invention multiple chamber dispenser cap first position is a position wherein the cap rests against the

lower stop, and the second position is a position wherein the cap rests against the upper stop. The upper stop and lower stop may be protrusions, ridges, flanges, lips or any one mechanism that will prevent further screwing or unscrewing. In some embodiments, the lower stop is a top surface of at least one of the circular top and of the plurality of chambers.

The present invention multiple chamber dispenser chambers may be integrally formed with and made a permanent part of the dispenser container. Alternatively, the plurality of chambers may be cartridges or other independent members that are insertable into and removable from the dispenser container.

The dispenser container may have any shape, as long as the top is circular so as to permit the threading and unthreading of the cap. In some preferred embodiments, the dispenser container is a circular shaped container, while in others, the dispenser container is non-circular in shape. The dispenser container may be made of any available material, and may be a rigid container or a squeeze dispenser container .

In some preferred embodiments, at least one dispensing orifice is located in a center area of the cap, and the plurality of chambers have a common area of connection in a center area, and the common area of connection includes sealing means to seal the at least one dispensing orifice when the cap is in its first position. However, if the downward rotation of the orifice and the closing area of the chambers are arranged

to coincide when the cap is in the closed position, both the dispensing orifice and the closing need not be centered.

The closing area that is contacted by the orifice, or its extension, may be a flat or other corresponding sealing surface, e.g., at the top of the chambers, or may be a post that has a sealing top that fits against the orifice. In one preferred embodiment, at least one dispensing orifice is located in a center area of the cap, and wherein the dispensing container includes a center post located below at least one dispensing orifice and adapted to seal the orifice by being pressed against it when the cap is in its closed position.

#### BRIEF DESCRIPTION OF THE DRAWINGS

The present invention should be more fully understood when the specification herein is taken in conjunction with the drawings appended hereto wherein:

Figure 1 illustrates a front, partially cut view of one embodiment of a present invention multiple chamber dispenser;

Figure 2 shows an alternative embodiment present invention dispenser, including the cap, in an exploded, partially cut side view, and Figure 3 shows a bottom view of the dispenser container of Figure 2;

Figure 4 illustrates a top view of four complementary chambers used in a present invention dispenser container, and Figure 5 shows these inside a present invention container; and,

Figures 6 and 7 illustrate top and front views of two different present invention dispenser containers that a non-circular in shape.

#### DETAILED DESCRIPTION OF THE PRESENT INVENTION

5 Figure 1 illustrates a front, partially cut view of a present invention multiple chamber dispenser 1. It includes a container 3 and a cap 21. Container 3 has a bottom 5, a circular outer side wall 6, and an open circular top 7. The bottom 5 has a central indentation 9 for holding the container 3 in place while filling and while threading cap 21 onto container 3. Inside the container are two chambers 13 and 17, that are  
10 removable and insertable cartridge-like members for holding separate, distinct flowable materials. Their bottoms, 15 and 19, respectively, rest inside the container 3 so that their tops are aligned with the top edge of container 3.

15 Cap 21 includes a side wall 23 with inside threads 25 that correspond to threads 10 on the outside of container 3. Cap top 27 has a nozzle 29 with a dispensing orifice 33 and top cap 35, as shown. Here, cap 21 is in its first, closed position and the cap 21 cannot be screwed down any further because the top of container 3 and the chamber tops act  
20 simultaneously as a lower stop (first stop). This closed position for cap 21, as shown in Figure 1, includes sealing by way of contact between the closing area created by edges 20 and 22 of chambers 13 and 17,

respectively, and the bottom of cap top 27 to isolate orifice 43 from chambers 13 and 17, as shown.

When cap 21 is rotated, it will screw upwardly to separate the underside of cap 21 from chamber edges 20 and 22 and, when inverted, will permit fluid flow from both chamber 13 and 17, simultaneously. Ledge 31 is located below threads 10 on the outside of container 3 and at as an upper stop when cap 21 is unscrewed to its second position (open position). Inwardly projecting cap ledge 30 rest against ledge 31 in the cap's second position.

Cap 21 and container 30 are manufactured separately and chambers 13 and 71 are filled and inserted in to container 3, and then cap 21 is screwed down to force fit ledge 30 over ledge 31 to permanently attach cap 21 to container 3. After cap 21 has been attached to container 3, its range of movement is restricted to those areas between and to the upper and lower stops.

Figure 2 shows an alternative embodiment present invention dispenser, including the container 51 and the cap 71, in an exploded, partially cut side view, and Figure 3 shows a bottom view of the dispenser container 51 of Figure 2. These two Figures are taken together:

Container 51 includes a outer side wall 53 and bottom 55, as well as an open circular top 57, with outside threads 59. Inside container 51 are two chambers 81 and 83 that extend to the top 57 and are divided by post 63. Post 63 is the closing area where the bottom 83 of nozzle 81 will

contact to seal dispensing orifices 85 and 87 and to isolate chambers 81 and 83 from one another when cap 71 is closed.

Cap 71 has a top 73, side wall 75, inside threads 79, and stopping ridge 77 that functions as does cap 21 described above.

5           Figure 4 illustrates a top view of four complementary chambers 101, 103, 105, and 107, that are used in a present invention dispenser container 130 shown in Figure 5. Figure 5 shows these inside present invention container 130, and these two Figures are taken together.

10           Chambers 101, 103, 105 and 107 are semi-cylindrical quadrants that together complete a circle. They are filled and inserted into container 130, as shown. Outer wall 111 includes threading 113, with stops (not shown) to receive a cap similar to those above. The underside of the cap would seal each chamber from all of the others when the cap is in the closed sealed first position.

15           Figures 6 and 7 illustrate top and front views of two different present invention dispenser containers 140 and 160, respectively, that a non-circular in shape. Referring to Figure 7, container 140 has a rectangular top 151, and rectangular, rather than circular shape. It has a front 141, that is flat, and has a circular top neck 143, with threads 145.

20           Inside the container 140 are chambers 147 and 149, and orifice closing area post 153.



Figure 7 shows an alternative embodiment present invention container 160, with an oval-shaped footprint and flat side walls such as side wall 161, and neck 163 with threads 165.

5 Obviously, numerous modifications and variations of the present invention are possible in light of the above teachings. It is therefore understood that within the scope of the appended claims, the invention may be practiced otherwise than as specifically described herein.